

## ABSTRACT OF THE DISCLOSURE

A system for generating processor hardware supports a language for significant extensions to the processor instruction set, where the designer specifies only the semantics of the new instructions and the system generates other logic. The extension language provides for the addition of processor state, including register files, and instructions that operate on that state. The language also provides for new data types to be added to the compiler to represent the state added. It allows separate specification of reference semantics and instruction implementation, and uses this to automate design verification. In addition, the system generates formatted instruction set documentation from the language specification.

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